NOV 1 4 2007 TECH CENTER 1600/2900

DATE: 10/29/2001

TIME: 14:44:35

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/236,995D

Input Set : A:\Seqlist.txt

Output Set: N:\CRF3\10292001\I236995D.raw

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4 <110> APPLICANT: Mahajan, Pramod
         Zuo, Zhuang
 7 <120> TITLE OF INVENTION: Poly ADP-Ribose Polymerase Gene and its
         Uses
10 <130> FILE REFERENCE: 5718-34
12 <140> CURRENT APPLICATION NUMBER: US 09/236,995D
13 <141> CURRENT FILING DATE: 1999-01-26
15 <150> PRIOR APPLICATION NUMBER: US 60/072,785
16 <151> PRIOR FILING DATE: 1998-01-27
18 <160> NUMBER OF SEQ ID NOS: 5
20 <170> SOFTWARE: FastSEQ for Windows Version 4.0
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23 <211> LENGTH: 2949
24 <212> TYPE: DNA
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25 <213> ORGANISM: Zea mays
27 <220> FEATURE:
28 <221> NAME/KEY: CDS
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40 cgg gcc tcg tgc aag tca tgc cgg tcc cct atc gcc aag gac cag ctc
41 Arg Ala Ser Cys Lys Ser Cys Arg Ser Pro Ile Ala Lys Asp Gln Leu
                                     25
42
44 cgt ctt ggc aag atg gtt cag gcg tca cag ttc gac ggc ttc atg ccg
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45 Arg Leu Gly Lys Met Val Gln Ala Ser Gln Phe Asp Gly Phe Met Pro
            35
46
48 atg tgg aac cat gcc agg tgc atc ttc agc aag aag aac cag ata aaa
                                                                       192
49 Met Trp Asn His Ala Arg Cys Ile Phe Ser Lys Lys Asn Gln Ile Lys
                             55
52 tcc gtt gac gat gtt gaa ggg ata gat gca ctt aga tgg gat gat caa
                                                                       240
53 Ser Val Asp Asp Val Glu Gly Ile Asp Ala Leu Arg Trp Asp Asp Gln
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                         70
56 gag aag ata cga aac tac gtt ggg agt gcc tca gct ggt aca agt tct
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57 Glu Lys Ile Arg Asn Tyr Val Gly Ser Ala Ser Ala Gly Thr Ser Ser
                                         90
                     85
60 aca gct gct cct cct gag aaa tgt aca att gag att gct cca tct gcc
61 Thr Ala Ala Pro Pro Glu Lys Cys Thr Ile Glu Ile Ala Pro Ser Ala
                                    105
64 cgt act tca tgt aga cga tgc agt gaa aag att aca aaa gga tcg gtc
                                                                       384
65 Arg Thr Ser Cys Arg Arg Cys Ser Glu Lys Ile Thr Lys Gly Ser Val
                                120
66
68 cgt ctt tca gct aag ctt gag agt gaa ggt ccc aag ggt ata cca tgg
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Input Set : A:\Seqlist.txt

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| 70   |                | Ala Lys Leu   |                     | Gly Pro Lys Gly          | Ile Pro Trp    |       |
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| 74 145   | 72 tat cat gcc | Age Cyc Phe   | Dhe Glu Val         | Ser Pro Ser Ala          | Thr Val Glu    |       |
| 76 aag ttc tca ggc tgg gat act ttg tcc gat gag gat aag aga aca aty 528 77 Lys Phe Ser Gly Trp Asp Thr Leu Ser Asp Glu Asp Lys Arg Thr Met 165 170 175 80 ctc gat ctt gtt aaa aaa gat gtt ggc aac aat gaa caa at gag gt 180 180 185 leu Asp Leu Val Lys Lys Asp Val Gly Asn Asn Glu Gln Asn Lys Gly 190 84 tcc aag cgc aag aaa agt gaa aat gat att gat agc taa aaa tec gcc 85 Ser Lys Arg Lys Lys Ser Glu Asn Asp Ile Asp Ser Tyr Lys Ser Ala 200 88 agg tta gat gaa agt aca tct gaa ggt aca gtg cga aca aat agg gc aa 193 Arg Leu Asp Glu Ser Thr Ser Glu Gly Thr Val Arg Asn Lys Gly Gln 210 92 ctt gta gac cca cgt ggt tcc aat act agt tca gct gat atc caa cta 231 Leu Val Asp Pro Arg Gly Ser Asn Thr Ser Ser Ala Asp Ile Gln Leu 215 92 ctt gta gac ca cgt ggt cca aat act agt tca gct gat atc caa cta 231 Leu Val Asp Pro Arg Gly Ser Asn Thr Ser Ser Ala Asp Ile Gln Leu 215 92 ctt gta gac cat gtg cga agt taa agg gat at ag gag gct ag 232 agg act agg gag at ag gag at ag gag act tg gag gat at ag gag gat agg gat agg gat ag gat  |                | 150           | THE GIW             | 155                      | 160            |       |
| 77 Lys Phe Ser Gly Trp Asp Thr Leu Ser Asp Glu Asp Lys Aff Thr Rec 165 170 175 165 165 170 175 165 165 170 175 165 165 170 175 180 180 180 180 185 190 184 tcc aag cgc aag aaa agt gaa aat gat att gat agc tac aaa tac gcc 85 Ser Lys Arg Lys Lys Ser Glu Asn Asp Tle Asp Ser Tyr Lys Ser Ala 195 200 205 186 agg tta gat gaa agt aca tct gaa ggt aca gtg cga aac aaa ggg caa 89 Arg Leu Asp Glu Ser Thr Ser Glu Gly Thr Val Arg Asn Lys Gly Gln 210 215 220 205 180 190 210 215 220 240 720 240 720 240 720 240 720 240 720 215 220 240 720 240 720 240 720 240 720 240 720 240 720 240 720 240 720 720 720 720 720 720 720 720 720 72  | 74 145         | aac taa aat   | act ttg tcc         | gat gag gat aag          | aga acc atg    | 528   |
| 165  | 70 day tic tea | Gly Tro Asp   | Thr Leu Ser         | Asp'Glu Asp Lys          | Arg Thr Met    |       |
| 80 ctc gat ctt gtt aaa aaa gat gtt ggc aac aat gaa caa aat aag ggt 81 Leu Asp Leu Val Lys Lys Asp Val Gly Asn Asn Glu Gln Asn Lys Gly 182 180 185 190  84 tcc aag cgc aag aaa agt gaa aat gat att gat agc tac aaa tcc gc 85 Ser Lys Arg Lys Lys Ser Glu Asn Asp Ile Asp Ser Tyr Lys Ser Ala 86 195 200 205  88 agg tta gat gaa agt aca tct gaa ggt aca gtg cga aac aaa ggg caa 89 Arg Leu Asp Glu Ser Thr Ser Glu Gly Thr Val Arg Asn Lys Gly Gln 90 210 220  92 ctt gta gac cca cgt ggt tcc aat act agt tca gct gat atc cac cta 93 Leu Val Asp Pro Arg Gly Ser Asn Thr Ser Ser Ala Asp Ile Gln Leu 94 225 230 240  96 aag ctt aag gag caa agt gac aca ctt tgg aag tta aag gat ggat 62 40  97 Lys Leu Lys Glu Gln Ser Asp Thr Leu Trp Lys Leu Lys Asp Gly Leu 198 245 250  100 aag act cat gta tcg gct gct gaa tta agg gat ggat g  | 78             | 165           |                     | 1/0                      | 1/3            |       |
| 180  | on staggat off | gtt aaa aaa   | gat gtt ggc         | aac aat gaa caa          | aat aag ggt    | 576   |
| 82   | 81 Leu Asp Leu | Val Lys Lys   | Asp Val Gly         | Asn Asn Glu Gln          | Asn Lys Gly    |       |
| 84 tcc aag cgc aag aaa agt gaa aat gat att gat agc tac aaa tcc gcc 85 Ser Lys Arg Lys Lys Ser Glu Asn Asp Ile Asp Ser Tyr Lys Ser Ala 86   | 9.2            | 180           | 185                 |                          | 190            |       |
| 85 Ser Lys Arg Lys Lys Ser Glu Asn Asp Ile Asp Ser Lyr Lys Ser Ala 86 195 200 205 205 88 agg tta gat gaa agt aca tct gaa ggt aca gtg cga aac aaa ggg caa 89 Arg Leu Asp Glu Ser Thr Ser Glu Gly Thr Val Arg Asn Lys Gly Gln 90 210 215 220 92 ctt gta gac cca cgt ggt tcc aat act agt tca gct gat atc caa cta 93 Leu Val Asp Pro Arg Gly Ser Asn Thr Ser Ser Ala Asp Ile Gln Leu 94 225 230 235 240 96 aag ctt aag gag caa agt gac aca ctt tgg aag tta aag gat gga ctt 97 Lys Leu Lys Glu Gln Ser Asp Thr Leu Trp Lys Leu Lys Asp Gly Leu 98 245 250 255 100 aag act cat gta tcg gct gct gaa tta agg gat atg ctt gag gct aat 101 Lys Thr His Val Ser Ala Ala Glu Leu Arg Asp Met Leu Glu Ala Asn 102 260 265 270 104 ggg cag gat aca tca gga cca gaa agg cac cta ttg gat cgc tgt gcg 105 Gly Gln Asp Thr Ser Gly Pro Glu Arg His Leu Leu Asp Arg Cys Ala 106 275 280 285 108 gat gga atg cta ttt gga gcg ctg ggt cct tgc cca gtc tgt gct aat 109 Asp Gly Met Leu Phe Gly Ala Leu Gly Pro Cys Pro Val Cys Ala Asn 110 290 295 112 ggc atg tac tat tat aat ggt cag tac caa tgc agt ggt aat gtc ta 113 Gly Met Tyr Tyr Tyr Asn Gly Gln Tyr Gln Cys Ser Gly Asn Val Ser 114 305 310 315 320 116 gag tgg tcc aag tgt aca tac ctt gcc aca gaa cct gtc cgc gtt aag 117 Glu Trp Ser Lys Cys Thr Tyr Ser Ala Thr Glu Pro Val Arg Val Lys 118 325 330 335 120 aag aag tgg caa att cca cat gga aca caa gaa gat gdt ctt caa cac 110 Lys Lys Trp Gln Ile Pro His Gly Thr Lys Asn Asp Tyr Leu Met Lys 120 340 345 350 124 tgg ttc aaa tct caa aag gtt aag aca cca gag agg gtt ctt cca cca 1104 125 Trp Phe Lys Ser Gln Lys Val Lys Lys Pro Glu Arg Val Leu Pro Pro 126 355 360 128 atg tca cct gag aaa tct gga agt aaa tta agg aga aca cca aga acct cat ttg 130 370 375 375 380 120 130 476 187 180 180 180 180 180 180 180 180 180 180  | 84 too aad coo | aag aaa agt   | gaa aat gat         | att gat agc tac          | aaa tcc gcc    | 624   |
| 86   | 85 Ser Lys Arg | , Lys Lys Ser | Glu Asn Asp         | He Asp Ser Tyr           | Lys Ser Ala    |       |
| 88 agg tta gat gat agt act tet gat gyt averaged by the series of the ser | 96 195         | 5             | 200                 | 205                      |                | 672   |
| 210 215 220  22 ctt gta gac cca cgt ggt tcc aat act agt tca gct gat atc caa cta 720  32 Leu Val Asp Pro Arg Gly Ser Asn Thr Ser Ser Ala Asp Ile Gln Leu 235 240  236 aag ctt aag gag caa agt gac aca ctt tgg aag tta aag gat gga ctt 768  75 Lys Leu Lys Glu Gln Ser Asp Thr Leu Trp Lys Leu Lys Asp Gly Leu 250 255  100 aag act cat gta tcg gct gct gaa tta agg gat atg ctt gag gct at 101 Lys Thr His Val Ser Ala Ala Glu Leu Arg Asp Met Leu Glu Ala Asn 102 260 270  104 ggg cag gat aca tca gga cca gaa agg cac cta ttg gat cgc tgt gcg 104 ggg gct gd   | 88 agg tta gat | gaa agt aca   | tct gaa ggt         | aca gtg cga aac          | aaa ggg caa    | 072   |
| 92 ctt gta gac cca cgt ggt tcc aat act agt tca gct gat atc caa cta 93 Leu Val Asp Pro Arg Gly Ser Asn Thr Ser Ser Ala Asp Ile Gln Leu 94 225 230 230 240 96 aag ctt aag gag caa agt gac aca ctt tgg aag tta aag gat gga ctt 97 Lys Leu Lys Glu Gln Ser Asp Thr Leu Trp Lys Leu Lys Asp Gly Leu 98 245 250 250 98 245 250 250 98 255 100 aag act cat gta tcg gct gct gaa tta aag gat atg ctt gag gct aat 101 Lys Thr His Val Ser Ala Ala Glu Leu Arg Asp Met Leu Glu Ala Asn 102 260 265 104 ggg cag gat aca tca gga cca gaa agg cac cta ttg gat cgc tgt gcg 105 Gly Gln Asp Thr Ser Gly Pro Glu Arg His Leu Leu Asp Arg Cys Ala 106 275 280 285 108 gat gga atg cta ttt gga gcg ctg ggt cct tgc cca gtc tgt gcg 109 Asp Gly Met Leu Phe Gly Ala Leu Gly Pro Cys Pro Val Cys Ala Asn 110 290 295 112 ggc atg tac tat tat aat ggt cag tac caa tgc agt ggt aat gtg tca 113 Gly Met Tyr Tyr Tyr Asn Gly Gln Tyr Gln Cys Ser Gly Asn Val Ser 114 305 310 310 116 gag tgg tcc aag tgt aca tac tct gcc aca gaa cct gtc ggt aag 117 Glu Trp Ser Lys Cys Thr Tyr Ser Ala Thr Glu Pro Val Arg Val Lys 118 325 120 aag aag tgg caa att cca cat gga aca aag aat gat tac ctt atg aag 121 Lys Lys Trp Gln Ile Pro His Gly Thr Lys Asn Asp Tyr Leu Met Lys 122 340 124 tgg ttc aaa tct caa aag gtt aag aaa cca gag agg gtt ctt cca ca 125 Trp Phe Lys Ser Gln Lys Val Lys Lys Pro Glu Arg Val Leu Pro Pro 126 355 128 atg tca cct gag aaa tct gga agt aag cct cag aga aca tca tct 129 Met Ser Pro Glu Lys Ser Gly Ser Lys Ala Thr Gln Arg Thr Ser Leu 130 370 132 Grt tct tct aag ggg ttg gat aat ta agg ttt tct gtt gda ag 1201 Lys Typ Gln Lys Ser Gly Ser Lys Ala Thr Gln Arg Thr Ser Leu 130 370 132 Grt tct tct aag ggg ttg gat aat ta agg ttt tct gtt gda gga ca 1201 Lys Typ Glu Lys Ser Gly Ser Lys Ala Thr Gln Arg Thr Ser Leu 130 370 132 Grt tct tct aag ggg ttg gat aat ta ctt ggt gda at tac tct ggt gda act tct ggt gda act tct ggt gda act tct ggg ttg gda act tct ggg gat act act tct gga aat tct ggg at act act tct ggg ttg gda act tct ggg  | 89 Arg Leu Asp | Glu Ser Thr   | Ser Glu Gly         | Thr Val Arg Ash          | TAR GIA GIU    |       |
| 93 Leu Val Asp Pro Arg Gly Ser Asn Thr Ser Ser Ala Asp 11e Gln Leu 94 225 230 230 235 240 240 250 245 250 255 260 255 260 255 260 255 260 255 260 255 260 255 260 255 260 255 260 255 260 255 260 255 260 260 265 260 260 265 260 260 260 260 260 260 260 260 260 260  | 90 210         |               | 215                 |                          | ato caa ota    | 720   |
| 94 225   | 92 ctt gta gad | cca cgt ggt   | tcc aat act         | Sor Sor Ala Asn          | Tle Gln Leu    | , _ 0 |
| 96 aag ctt aag gag caa agt gac aca ctt tgg aag tta aag gat gga ctt 97 Lys Leu Lys Glu Gln Ser Asp Thr Leu Trp Lys Leu Lys Asp Gly Leu 98   |                | Pro Arg GLY   | Ser Ash Thi         | 235                      | 240            |       |
| 97 Lys Leu Lys Glu Gln Ser Asp Thr Leu Trp Lys Leu Lys Asp Gly Leu 198   | 94 225         | 230<br>       | gag aga ctt         |                          |                | 768   |
| 98   | 96 aag ctt aag | g gag caa ayu | Acn Thr Len         | Tro Lvs Leu Lvs          | Asp Gly Leu    |       |
| 100   aag act cat gta tcg gct gct gaa tta agg gat atg ctt gag gct aat   101   Lys Thr His Val Ser Ala Ala Glu Leu Arg Asp Met Leu Glu Ala Asn   260   265   270    | _              |               | ASP III Lea         | 250                      | 255            |       |
| 101 Lys Thr His Val Ser Ala Ala Glu Leu Arg Asp Met Leu Glu Arg Asp Met Leu Glu Arg Asp Met Leu Asp Arg Cys Ala 260 280 285 280 285 285 285 285 285 285 285 285 285 285  | 100 aag agt G  | at ota too oo | t get gaa tt        | a agg gat atg ct         | t gag gct aat  | 816   |
| 102  | 100 day acc co | is Val Ser Al | a Ala Glu Le        | u Arg Asp Met Le         | u Glu Ala Asn  |       |
| 104 ggg cag gat aca tca gga cca gaa agg cac cta ttg gat cgc tgt gcg   864     105 Gly Gln Asp Thr Ser Gly Pro Glu Arg His Leu Leu Asp Arg Cys Ala     106  | 102            | 260           | 26                  | 5                        | 270            |       |
| 105 Gly Gln Asp Thr Ser Gly Pro Glu Arg His Leu Leu Asp Arg Cys Ala 285   285   286   275   280   285   28   | 104 agg cag g  | at aca tca gg | a cca gaa ag        | g cac cta ttg ga         | t cgc tgt gcg  | 864   |
| 106  | 105 Gly Gln As | sp Thr Ser Gl | y Pro Glu Ar        | g His Leu Leu As         | p Arg Cys Ala  |       |
| 109 Asp Gly Met Leu Phe Gly Ala Leu Gly Pro Cys Pro Val Cys Ala Ash 110 290 295 300  112 ggc atg tac tat tat aat ggt cag tac caa tgc agt ggt aat gtg tca 113 Gly Met Tyr Tyr Tyr Asn Gly Gln Tyr Gln Cys Ser Gly Asn Val Ser 114 305 310 315 320  116 gag tgg tcc aag tgt aca tac tct gcc aca gaa cct gtc cgc gtt aag 117 Glu Trp Ser Lys Cys Thr Tyr Ser Ala Thr Glu Pro Val Arg Val Lys 118 325 330 335  120 aag aag tgg caa att cca cat gga aca aag aat gat tac ctt atg aag 121 Lys Lys Trp Gln Ile Pro His Gly Thr Lys Asn Asp Tyr Leu Met Lys 122 340 345  124 tgg ttc aaa tct caa aag gtt aag aaa cca gag gg ggt ctt ctca cca 1104 125 Trp Phe Lys Ser Gln Lys Val Lys Lys Pro Glu Arg Val Leu Pro Pro 126 355 360 365  128 atg tca cct gag aaa tct gga agt aaa gca act cag aga aca tca ttg 130 370 375 380  120 atg tct tct aaa ggg ttg gat aaa tta agg ttt tct gtt gta gga caa 1200  | 106 2          | 75            | 280                 | 28                       | 5              | 010   |
| 109 Asp Gly Met Leu Phe Gly Ala Leu Gly Pro Cys Pro Val Cys Ala Ash 110 290 295 300  112 ggc atg tac tat tat aat ggt cag tac caa tgc agt ggt aat gtg tca 113 Gly Met Tyr Tyr Tyr Asn Gly Gln Tyr Gln Cys Ser Gly Asn Val Ser 114 305 310 315 320  116 gag tgg tcc aag tgt aca tac tct gcc aca gaa cct gtc cgc gtt aag 117 Glu Trp Ser Lys Cys Thr Tyr Ser Ala Thr Glu Pro Val Arg Val Lys 118 325 330 335  120 aag aag tgg caa att cca cat gga aca aag aat gat tac ctt atg aag 121 Lys Lys Trp Gln Ile Pro His Gly Thr Lys Asn Asp Tyr Leu Met Lys 122 340 345  124 tgg ttc aaa tct caa aag gtt aag aaa cca gag gg ggt ctt ctca cca 1104 125 Trp Phe Lys Ser Gln Lys Val Lys Lys Pro Glu Arg Val Leu Pro Pro 126 355 360 365  128 atg tca cct gag aaa tct gga agt aaa gca act cag aga aca tca ttg 130 370 375 380  120 atg tct tct aaa ggg ttg gat aaa tta agg ttt tct gtt gta gga caa 1200  | 108 gat gga a  | tg cta ttt gg | a gcg ctg gg        | t cct tgc cca gt         | c tgt gct aat  | 912   |
| 110  | 109 Asp Gly M  | et Leu Phe Gl | y Ala Leu Gl        | y Pro Cys Pro vo         | I Cys Ala Asii |       |
| 112 ggc atg tac tat tat aat ggt cag tac caa tgg tag tac caa tgg tag tac caa tgg tag tag tag tag tag tag tag tag t  | 110 290        |               | 295                 |                          | rt aat oto toa | 960   |
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| 114 305  116 gag tgg tcc aag tgt aca tac tct gcc aca gaa cct gtc cgc gtt aag 117 Glu Trp Ser Lys Cys Thr Tyr Ser Ala Thr Glu Pro Val Arg Val Lys 118  325  120 aag aag tgg caa att cca cat gga aca aag aat gat tac ctt atg aag 1056  121 Lys Lys Trp Gln Ile Pro His Gly Thr Lys Asn Asp Tyr Leu Met Lys 122  340  124 tgg ttc aaa tct caa aag gtt aag aaa cca gag agg gtt ctt cca cca 1104  125 Trp Phe Lys Ser Gln Lys Val Lys Lys Pro Glu Arg Val Leu Pro Pro 126  355  360  360  365  128 atg tca cct gag aaa tct gga agt aaa gca act cag aga aca tca ttg 1152  129 Met Ser Pro Glu Lys Ser Gly Ser Lys Ala Thr Gln Arg Thr Ser Leu 130  370  375  380  1200   |                | yr Tyr Tyr As | n Gry Gru ry        | 71 GIN CYS SEL 0.<br>315 | 320            |       |
| 117 Glu Trp Ser Lys Cys Thr Tyr Ser Ala Thr Glu Pro Val Arg Val Lys 335  120 aag aag tgg caa att cca cat gga aca aag aat gat tac ctt atg aag 1056  121 Lys Lys Trp Gln Ile Pro His Gly Thr Lys Asn Asp Tyr Leu Met Lys 345  122 340  124 tgg ttc aaa tct caa aag gtt aag aaa cca gag agg gtt ctt cca cca 1104  125 Trp Phe Lys Ser Gln Lys Val Lys Lys Pro Glu Arg Val Leu Pro Pro 355  128 atg tca cct gag aaa tct gga agt aaa gca act cag aga aca tca ttg 1152  129 Met Ser Pro Glu Lys Ser Gly Ser Lys Ala Thr Gln Arg Thr Ser Leu 370  370  375  380  1200   | 114 305        |               | .U<br>va tao tot do |                          | c cgc gtt aag  | 1008  |
| 118  120 aag aag tgg caa att cca cat gga aca aag aat gat tac ctt atg aag  121 Lys Lys Trp Gln Ile Pro His Gly Thr Lys Asn Asp Tyr Leu Met Lys  122  124 tgg ttc aaa tct caa aag gtt aag aaa cca gag agg gtt ctt cca cca  125 Trp Phe Lys Ser Gln Lys Val Lys Lys Pro Glu Arg Val Leu Pro Pro  126  127  128 atg tca cct gag aaa tct gga agt aaa gca act cag aga aca tca ttg  128 atg tca cct gag aaa tct gga agt aaa gca act cag aga aca tca ttg  129 Met Ser Pro Glu Lys Ser Gly Ser Lys Ala Thr Gln Arg Thr Ser Leu  130  1370  1380  1200   | 116 gag tgg t  | or two Cyc Th | or Tur Ser Al       | a Thr Glu Pro Va         | al Arg Val Lys |       |
| 120 aag aag tgg caa att cca cat gga aca aag aat gat tac ctt atg aag 1056 121 Lys Lys Trp Gln Ile Pro His Gly Thr Lys Asn Asp Tyr Leu Met Lys 122 340 345 350 124 tgg ttc aaa tct caa aag gtt aag aaa cca gag agg gtt ctt cca cca 1104 125 Trp Phe Lys Ser Gln Lys Val Lys Lys Pro Glu Arg Val Leu Pro Pro 126 355 360 365 128 atg tca cct gag aaa tct gga agt aaa gca act cag aga aca tca ttg 1152 129 Met Ser Pro Glu Lys Ser Gly Ser Lys Ala Thr Gln Arg Thr Ser Leu 130 370 375 380 132 ctg tct tct aaa ggg ttg gat aaa tta agg ttt tct gtt gta gga caa 1200  |                | er hys cys 11 | ii iyi ber iii      | 330                      | 335            |       |
| 121 Lys Lys Trp Gln Ile Pro His Gly Thr Lys Asn Asp Tyr Leu Met Lys 122 340 345 350  124 tgg ttc aaa tct caa aag gtt aag aaa cca gag agg gtt ctt cca cca 1104 125 Trp Phe Lys Ser Gln Lys Val Lys Lys Pro Glu Arg Val Leu Pro Pro 126 355 360 365  128 atg tca cct gag aaa tct gga agt aaa gca act cag aga aca tca ttg 129 Met Ser Pro Glu Lys Ser Gly Ser Lys Ala Thr Gln Arg Thr Ser Leu 130 370 375 380  132 ctg tct tct aaa ggg ttg gat aaa tta agg ttt tct gtt gta gga caa 1200   | 118            | aa caa att Co | ra dat oga ad       |                          | ac ctt atg aag | 1056  |
| 122 340 345 350  124 tgg ttc aaa tct caa aag gtt aag aaa cca gag agg gtt ctt cca cca 1104  125 Trp Phe Lys Ser Gln Lys Val Lys Lys Pro Glu Arg Val Leu Pro Pro 126 355 360 365  128 atg tca cct gag aaa tct gga agt aaa gca act cag aga aca tca ttg 129 Met Ser Pro Glu Lys Ser Gly Ser Lys Ala Thr Gln Arg Thr Ser Leu 130 370 375 380  132 ctg tct tct aaa ggg ttg gat aaa tta agg ttt tct gtt gta gga caa 1200  | 120 day day C  | rn Gln Ile Pi | o His Gly Th        | nr Lys Asn Asp T         | r Leu Met Lys  |       |
| 124 tgg ttc aaa tct caa aag gtt aag aaa cca gag agg gtt ctt cca cca 1104 125 Trp Phe Lys Ser Gln Lys Val Lys Lys Pro Glu Arg Val Leu Pro Pro 126 355 360 365 128 atg tca cct gag aaa tct gga agt aaa gca act cag aga aca tca ttg 129 Met Ser Pro Glu Lys Ser Gly Ser Lys Ala Thr Gln Arg Thr Ser Leu 130 370 375 380 132 ctg tct tct aaa ggg ttg gat aaa tta agg ttt tct gtt gta gga caa 1200  |                |               | 34                  | 15                       | 350            |       |
| 125 Trp Phe Lys Ser Gln Lys Val Lys Lys Pro Glu Arg Val Leu Plo Plo  126 355 360 365  128 atg tca cct gag aaa tct gga agt aaa gca act cag aga aca tca ttg 1152  129 Met Ser Pro Glu Lys Ser Gly Ser Lys Ala Thr Gln Arg Thr Ser Leu  130 370 375 380  132 ctg tct tct aaa ggg ttg gat aaa tta agg ttt tct gtt gta gga caa 1200   | 124 +aa ++a a  | aa tot caa aa | ag gtt aag aa       | aa cca gag agg g         | t ctt cca cca  | 1104  |
| 126 355 360 363<br>128 atg tca cct gag aaa tct gga agt aaa gca act cag aga aca tca ttg 1152<br>129 Met Ser Pro Glu Lys Ser Gly Ser Lys Ala Thr Gln Arg Thr Ser Leu<br>130 370 375 380<br>132 ctg tct tct aaa ggg ttg gat aaa tta agg ttt tct gtt gta gga caa 1200  | 125 Tro Phe L  | ys Ser Gln L  | ys Val Lys Ly       | ys Pro Glu Arg V         | al Leu Pro Pro |       |
| 128 atg tca cct gag aaa tct gga agt aaa gca act cag aga aca tca ttg 1132 129 Met Ser Pro Glu Lys Ser Gly Ser Lys Ala Thr Gln Arg Thr Ser Leu 130 370 375 380 132 ctg tct tct aaa ggg ttg gat aaa tta agg ttt tct gtt gta gga caa 1200  | 126 3          | 55            | 360                 | 3                        | 2.2            | 1150  |
| 129 Met Ser Pro Glu Lys Ser Gly Ser Lys Ala Thr Gin Arg Thr Ser Leu 130 370 375 380 132 otg tot tot aaa ggg ttg gat aaa tta agg ttt tot gtt gta gga caa 1200   | 120 ata taa a  | ct gag aaa t  | ct gga agt aa       | aa gca act cag a         | ga aca tca ttg | 1127  |
| 130 370 375 360<br>132 of a tot tot aga ggg ttg gat aga tta agg ttt tot gtt gta gga caa 1200   | 129 Met Ser P  | ro Glu Lys S  | er Gly Ser Ly       | ys Ala Thr Gin A         | rg Thr Ser Leu |       |
| 130 Ata tat tat and add all dat add ced dyg eec coo jour je  | 130 370        |               | 375                 | 380                      |                | 1200  |
| 133 Leu Ser Ser Lys Gly Leu Asp Lys Leu Arg Phe Ser val val Gly Gin  | 132 ctg tct t  | ct aaa ggg t  | tg gat aaa ti       | ta agg ttt tot g         | LL yea yya caa | 1200  |
|  | 133 Leu Ser S  | Ser Lys Gly L | eu Asp Lys L        | eu arg Phe Ser V         | ar var grå gru |       |

RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/236,995D

DATE: 10/29/2001
TIME: 14:44:35

Input Set : A:\Seqlist.txt

Output Set: N:\CRF3\10292001\1236995D.raw

|         |              |                |             | ,          | Outpu        | ul 3  | C C          | (          |              |              |        | •                 |            |              |                 |                     |                   |              |   |
|---------|--------------|----------------|-------------|------------|--------------|-------|--------------|------------|--------------|--------------|--------|-------------------|------------|--------------|-----------------|---------------------|-------------------|--------------|---|
| 1       | 134 3        | 185            |             |            |              | 2     | 390          |            |              |              |        | 395               |            |              |                 |                     | 400               | 1040         |   |
|         |              |                | taa c       | таа с      | qca (        |       | 22+ C        | gag :      | tgg ،        | att          | gag    | aag               | ctc        | aaa          | ctt             | gct d               | ggt               | 1248         |   |
| اد<br>7 | 137 C        | er T           | 'Ac (       | Glu A      | Ala          | Āla A | Asn (        | Glu        | Trp .        | TIE /        | GIU.   | Lys               | Leu        | Lys          |                 |                     | στλ               | *            |   |
|         |              |                |             |            |              | 105   |              |            |              |              | 410    |                   |            |              |                 |                     |                   | 1206         |   |
|         |              | TOC F          | iac 1       | ttc 1      |              | ~~~   | agg (        | gtt        | gtc          | aaa          | gat    | att               | gat        | tgt          | tta<br>-        | att<br>Ile          | gca               | 1296         |   |
| -       | ∪ \<br>141 ' | ,oo ≀<br>∖la ' | \sn \       | Phe '      | Tyr          | Ala   | Arg          | Val        | var.         | гуз .        | Asp    | Ile               | Asp        | 0,10         |                 | Ile                 | ΑΙα               |              |   |
|         |              |                |             |            | 400          |       |              |            |              | 4 / 7        |        |                   |            |              | 100             |                     |                   | 1211         |   |
|         |              | tat 1          | gat 4       |            |              | gac . | aat          | gaa        | aat          | gct          | gaa    | gtc               | agg        | aaa          | gca             | agg<br>Arg          | agg<br>n~~        | 1344         |   |
|         | 145 '        | Tys (          | Glv (       | Glu        | Leu          | Asp   | Asn          | Glu        | Asn          | Ala          | Glu    | Val               | Arg        | 1110         | Ala             | Arg                 | arg               |              |   |
|         |              |                |             | 405        |              |       |              |            | 4411         |              |        |                   |            | 1 1 -        |                 |                     |                   | 1200         |   |
|         |              | pta :          |             |            | cca          | att   | gta          | agg        | gag          | ggt          | tac    | att               | gga        | gaa          | tgt             | gtt<br>Val          | aaa<br>T          | 1392         |   |
|         | 140          | Len ∶          | Lys         | Ile        | Pro          | Ile   | Val          | Arg        | Glu          | Gly          | Tyr    | Ile               | 017        | Glu          | Cys             | Val                 | ьys               |              |   |
|         |              |                | ^           |            |              |       |              | // ¬ ¬     |              |              |        |                   | 400        |              |                 |                     |                   | 1440         |   |
|         |              |                |             | aaa        | tgc          | tgc   | cat          | ttg        | att          | tgt          | ata    | aac               | tgg        | aat          | gcc             | tta<br>Leu          | yag<br><u>c</u> 1 | T##U         |   |
|         | 153          | Ara            | Thr         | Lys        | Cys          | Cys   | His          | Leu        | TTE          | Cys          | TIE    | ASII              | Trp        | Asn          | ALA<br>W        | Leu                 | TOU F             | A.           | $\overline{}$                               |
|         | 154          | 4,65           | 77          | _          | 50           | 1.1   | 479          | 00         | 111          | 111          | 111    | <sup>№</sup> 47/5 | <u> </u>   | 111          | 1477            | 1/1                 | , FON             | 1488         | 1   |
|         | 156          | tcc            | ťća         | a'a'a'     | ggc          | mgt   | áćt/         | ģťď        | ácť          | gtt          | adá    | gtť               | aag        | ggc          | . cga           | agt<br>Ser          | . ye∟<br>Δ1∍      |              | /   |
| M>      | 157          | Ser            | Ser         | Lys        | Gly          | Xaa   | Thr          | val        | Thr          | Val          | гдэ    | Val               | ьys        | GTÄ          | Arg             | , ∍er<br>⊿os        | . діа<br>/-       | ~~ <b>jo</b> | tan tanded                                  |
|         |              |                |             |            |              |       |              |            |              |              |        |                   |            |              |                 |                     |                   | 1536         | There work historial and are individual and |
|         |              | tġť            | tca         | tya        | - ~+         | aat   | CVC          | att        | tgć          | aag          | aat    | act<br>           | 90T        | uac<br>Hin   | ull<br>Tle      | cct<br>Pro          | Xaa               | ,            | 6 1m 1 11                                   |
| M>      | 161          | Cys            | Ser         | (Xaa)      | Ser          | Pro   | Xaa          | <b>Nal</b> | Cys          | гуѕ          | WPII   | ınr               | чтg        | . HIS        | 510             |                     | ر ست              | 1584         | ( wor where                                 |
|         |              |                |             |            |              |       |              |            |              |              |        |                   |            |              |                 |                     |                   | 1584         | / gri Min at                                |
| M>      |              | grà            | tgg         | gaa        | aag          | cat   | ata          | caa        | rgc<br>C     | amc<br>v     | To     | , add<br>T.vc     | Uat<br>Hie | Val          | Len             | Thr                 | xaa               |              | INOT MEN                                    |
| M>      | 165(         | Xãa            | Trp         | Glu        | Lys          | His   | Ile          | GIn        | . Cys        | Add          | ьeu    | . тув             |            | 525          |                 |                     | Kaa               |              | 1 7 1 7 1 7 1 7 1                           |
|         | 166          | -21 h          | (P)         | 515        |              |       | ~~~          | +20        | 520<br>tat   | · ata        | ctc    | cag               | atc        | att          | t gaa           | a cag               | gat               | 1632         | I well for the thirt                        |
| M>      | 168          | cac\           | (Mad        | gtg        | tgy          | aca   | ggc          | uac<br>m   | . LaT<br>Tυ~ | . yua<br>Tal | T,en   | G]n               | Ile        | Ile          | Glu             | ı Gln               | Asp               |              | I won't was                                 |
| M>      | 169          | His            | Xaa/        | Wal        | . Cys        | Thr   | GTA          | 535        | TYT          | , var        | . Deu  | . 0211            | 540        | )            |                 |                     | _                 |              | - July 1987                                 |
|         | 170          |                | 530         |            | ~ c          | taa   | tac          | αta        | +++          | cat          | aag    | tqa               | qqa        | a cgg        | ı gtt           | t ggg               | g agt<br>v Ser    | 1680         | seq.  |
|         | 172          | gat            | ggg<br>Cl-  | LCT<br>GA- | ya9 ۔<br>۱۰۰ | Cve   | . cac<br>Tvr | ۷al        | Phe          | Ara          | Lys    | Trp               | Gly        | , Arg        | y Val           | l Gly               |                   |              | 120   |
|         |              |                |             |            |              |       | 551          |            |              |              |        | 222               | ,          |              |                 |                     |                   |              | UV.   |
|         |              | 545<br>gag     |             | at+        | gas          | gaa   |              |            | cta          | gaq          | gag    | ī atg             | 1 tca      | a aac        | a act           | t gaç               | g gca<br>u Ala    | 1728         | $\bigcap $                                  |
|         | 177          | yay<br>Clir    | uad<br>Tive | Tla        | G]v          | Glv   | Gln          | Lys        | Leu          | . Ğlu        | Glu    | ı Met             | . Sei      | r Lys        | s Thi           |                     |                   |              | VNH   |
|         |              |                |             |            |              | 565   | •            |            |              |              | .J / U | U                 |            |              |                 |                     |                   | 1776         |   |
|         |              |                | aar         | gaa        | ttc          |       |              | tta        | ı ttt        | . ctt        | . gaç  | aaç               | , act      | t ggi        | a aac           | c tci               | a tgg<br>r Trp    | 1776         | ,   |
|         | 181          | Ile            | Lvs         | Glu        | Phe          | Lys   | Arg          | Leu        | ı Ph∈        | e rea        | r Gra  | ı Lyt             | 3 Thi      | r Gl         | 1               |                     | r Trp             |              |   |
|         |              |                |             |            |              | `     |              |            |              | י חרי        | )      |                   |            |              |                 | •                   |                   |              |   |
|         |              |                | gct         | tga        |              |       | aaa          | ı acc      | aat :        | t ttl        | t cgu  | g aaq             | g ca       | g cc         | L gg            | y agi               | a ttt<br>g Phe    | ±0∠4         | _   |
|         | 185          | Glu            | Ála         | a Trp      | p Glu        | ı Cys | 3 Lys        | 3 Thi      | r Asn        | n Pne        | e Ari  | g Ly.             | s Gl       | 11 1 1 /     | 0 0 - 1         | Y AI                | g Phe             |              |   |
|         | 100          |                |             | 505        | 5            |       |              |            | 600          | U            |        |                   |            |              | ~               |                     |                   |              | <b>)</b>                                    |
|         |              |                | cca         |            |              | t gtt | t gat        | tat        | t ggi        | t gti        | c aa   | g aa              | a gc       | a CC         | a da            | .u. ∪9′.<br>g. 7\~~ | g aaa             |              |   |
|         | 189          | Tyr            | Pro         | ) Leu      | ı Asp        | o Val | l Ası        | р Туг      | r Gly        | y Va.        | т ГА   | s Ly              | 2 VIC      | u II.        | υгλ             | J AI                | g Lys             |              |   |
|         |              |                |             | ^          |              |       |              | 615        | ~            |              |        |                   | V 2.       |              |                 |                     |                   |              | )   |
|         |              |                | _           |            | t gai        | a atç | g aa:        | a agu      | t tc         | c ct         | L gc   | L CC              | L Ca       | a lt<br>n r- | .y UL<br>11 T^: | יי אַם.<br>ט בוי    | a ctc<br>u Leu    |              |   |
|         | 193          | Asp            | o Ile       | . Sei      | r Glı        | u Met | t Lys        | s Sei      | r Se.        | r Le         | u Al   | a FI              | 0 01       | .т. ь€       | ∟س ب            | ـر ب                | u Leu<br>640      |              |   |
|         |              |                | _           |            |              |       | 631          | 11         |              |              |        | UJ.               | _          |              |                 |                     |                   |              | 3   |
|         |              |                |             | y atç      | g cti        | t tt( | c aa         | t gt       | g ga         | g ac         | a ta   | ∟ ag              | a gc       | יג פו.       | a Ma            | ام Mo               | g gaa<br>et Glu   |              |   |
|         | 197          | 7 Met          | . Lys       | s Me       | t Leı        | u Phe | e Ası        | n Va.      | ⊥ Gl         | u Th         | r ry.  | T HT              | A WI       | LA M.        | בת ויונ         | et Me<br>65         |                   |              |   |
|         | 198          |                | •           |            |              | 645   | 5            |            |              |              | 65     | , U               |            |              |                 | 0.0                 |                   |              |   |
|         |              |                |             |            |              |       |              |            |              |              |        |                   |            |              |                 |                     |                   |              |   |
|         |              |                |             |            |              |       |              |            |              |              |        |                   |            |              |                 |                     |                   |              |   |

The type of errors shown exist throughout the Sequence Listing. Please check subsequent sequences for similar errors.

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/236,995D

DATE: 10/29/2001 TIME: 14:44:35

Input Set : A:\Seqlist.txt

Output Set: N:\CRF3\10292001\1236995D.raw

|    |       |            |                |               | -      |                |          |          |       |            |             |                |          |              |              |            | ara      | 2016     | Λ            |
|----|-------|------------|----------------|---------------|--------|----------------|----------|----------|-------|------------|-------------|----------------|----------|--------------|--------------|------------|----------|----------|--------------|
|    | 200   | ttt        | gaa            | awt           | aat    | atg            | tca      | gaa a    | atg   | cct        | ctt         | ggg            | aag      | cta          | agc          | mag        | 910<br>1 | not lost | la al        |
| W> | 201   | Phe        | Glu            | Xaa           | Asn    | Met            | Ser      | Glu I    | Met   | Pro        | Leu         | СТĀ            | гĀг      | Leu          | 670          | Naa        | Nou.     | NOT WAY  |              |
|    | ~ ^ ^ |            |                |               | 660    |                |          |          |       | כסס        |             |                |          |              | 0,0          |            |          | 2064     |              |
|    | 204   | aat        | att            | gag           | raa    | gga            | ttt      | gaa      | gca   | tta        | act<br>mb~/ | vaal           | Vaa      | VAL          | Xaa          | Leu        | Phe      |          |              |
| W> | 205   | Asn        | Ile            | Glu           | Xaa    | Gly            | Phe      | GLu .    | ALA   | Leu        | THE         | <u>Naay</u>    | Ang (    | 685          |              |            | 1        | 2/07     |              |
|    | 206   |            |                | 675           | 2      | 2019           | <b>.</b> |          | 680   | ~~~        | ++~         | ++r            | αaα      |              | act          | naa        | ttg      | 2112     |              |
| W> | 208   | gaa        | gga            | cac           | cgc    | tna            | tca      | agc      | mbr   | ggc<br>clv | Leu/        | Tan.           | Glu      | Lvs          | Ala          | Xaa        | Leu      |          | 1 1 1 1      |
| M> |       |            | GJA            | His           | Arg    | Xaa            | ser      | 695_     | 1111  | <u></u>    | <u> </u>    | 2              | 700      | -1-          |              | $\cup_{-}$ |          |          | - not booked |
|    | 210   |            | 690            | sga           | ~~~    | ÷ حب           | cut      | +++      | tca   | ctc        | t.t.a       | tcc            | ctt      | cta          | ttc          | atc        | ctc      | 2160     | •            |
| W> | 212   | ttg        | ytg            | sya           | you.   | Vaa            | Yaa      | Phe      | Ser   | Leu        | Leu         | Ser            | Leu      | Leu          | Phe          | Ile        | Leu      |          | •            |
| M> |       | 705        |                |               |        |                | 7 1 ()   |          |       |            |             | / 1 2          |          |              |              |            |          |          |              |
|    | 016   | 705        | ++=            | tac           | ααα    | atσ            | agg      | atq      | att   | tca        | tat         | tca            | aag      | gcg          | aaa          | atg        | ctt      | 2208     |              |
|    | 210   | ala<br>Tlo | LLa            | Tyr           | Glv    | Met            | Ara      | Met      | Ile   | Ser        | Tyr         | Ser            | Lys      | Ala          | Lys          | Met        | Leu      |          |              |
|    | 010   |            |                |               |        | 725            |          |          |       |            | /30         |                |          |              |              | , 55       |          | 225      |              |
|    |       | gaa        | act            | ctg           | caq    | a t            | att      | gaa      | att   | gct        | tca         | aag            | ata      | gtt          | ggc          | ttc        | gat      | 2256     |              |
|    | 220   | Glu        | Ala            | Leu           | Gln    | Asp            | Ile      | Ğlu      | Ile   | Ala        | Ser         | Lys            | Ile      | Val          | 011          | 1 110      | Asp      |          |              |
|    |       |            |                |               | 710    |                |          |          |       | 740        |             |                |          |              | , 50         |            |          | 2204     |              |
|    | ~~ .  |            | σac            | agt           | gat    | gaa            | tct      | ctt      | gat   | gat        | aaa         | tat            | atg      | aaa          | ctt          | cac        | tgt      | 2304     |              |
|    | 225   | Ser        | Asp            | Ser           | Āsp    | Glu            | Ser      | Leu      | Asp   | Asp        | Lys         | $\mathtt{Tyr}$ | Met      | цу           | ь            | Hls        | Cys      |          |              |
|    | 000   |            |                | 755           |        |                |          |          | /bU   |            |             |                |          | 703          |              |            |          |          |              |
|    |       |            | atc            | acc           | ccg    | ctg            | gct      | cac      | gat   | agt        | gaa         | gat            | tac      | aag          | LLd          | 1 all      | . gay    | 2332     |              |
|    | 229   | Asp        | Ile            | Thr           | Pro    | Leu            | Ala      | His      | Asp   | Ser        | Glu         | Asp            | тут      | Lys          | ьео          | TTE        | GIU      |          |              |
|    | ~ ~ ~ |            | 770            |               |        |                |          | 775      |       |            |             |                | 700      |              |              |            |          |          |              |
|    | 232   | cag        | tat            | ctc           | ctc    | aac            | aca      | cat      | gct   | CCT        | act         | Cac            | Tuc      | yac<br>Nen   | Trr          | Ser        | Leu      |          |              |
|    |       |            |                | Leu           | Leu    | Asn            | Thr      | His      | Ата   | PIO        | THE         | 795            | цуэ      | , vob        |              |            | 800      |          |              |
|    | 234   | 785        | <b>,</b>       |               |        |                | 790      | <b>.</b> | a++   | ~a+        | og a        |                |          | даа          | ctt          | . aat      |          |          |              |
|    | 236   | gaa        | ı ctg          | gag<br>Glu    | gaa    | gtt            | . TII    | Cor      | TOU   | yaı<br>Nen | Δra         | Asn            | Glv      | Glu          | Lei          | ı Asr      | ı Lys    | l .      |              |
|    |       |            | ı Leu          | ı G1u         | . GIu  | Val            | Pne      | Ser      | Leu   | кър        | 810         | 110 P          | 0_1      |              |              | 815        | 5        |          |              |
|    | 238   | }          |                | a aga         |        | 805            |          | aat      | cta   | cat        |             |                | ato      | r cta        | tta          | a tgg      | cac      | 2496     |              |
|    | 240   | ) tac      | tca            | aga<br>Arg    | tal    | . aaa          | . aat    | laut     | Len   | His        | Asn         | Lys            | Met      | Leu          | ı Leı        | ı Trp      | His      | 5        |              |
|    |       |            |                |               | 020    | ١              |          |          |       | - 823      |             |                |          |              | 05           | •          |          |          |              |
|    | 242   |            | - +            | a agg         | . ++0  |                | r aat    | ttt.     | at.a  | σσα        | att         | ctt            | : agt    | caa          | a gg         | g cta      | a aga    | a 2544   |              |
|    | 244   | : gg:      | r Col          | r Arg         | r T.01 | , acy<br>ı Thr | Asn      | Phe      | Val   | gĺy        | Ile         | Leu            | ı Sei    | c Glr        | n G1         | y Lei      | ı Arç    | J        |              |
|    | ~ * * | -          |                | 0.25          | :      |                |          |          | 840   | )          |             |                |          | 04.          | ,            |            |          |          |              |
|    |       |            | t ac           |               |        | - σασ          | a dca    | cct      | gtt   | act        | ggc         | : tat          | ate      | g tto        | e gg         | c aaa      | a ggo    | 2592     |              |
|    | 240   | 3 Tl       | c 900<br>α Δ1; | a cco         | Pro    | o Glu          | ı Ala    | Pro      | val   | Thr        | Gly         | туј            | c Met    | t Phe        | e Gl         | у Lу       | s Gl     | Į.       |              |
|    | 25/   | <b>a</b>   | 05             | n             |        |                |          | 855      |       |            |             |                | 001      | J            |              |            |          |          |              |
|    | 0.5   | ــــ       | _ +            | ~ ++1         | c qca  | a gat          | . cta    | ı gta    | ago   | aag        | gago        | gca            | a caa    | a ta         | c tg         | t ta       | t gt     | g 2640   |              |
|    | 25    | 3 Le       | u Tv:          | r Phe         | e Ála  | a Asp          | Let      | ı Val    | Ser   | Lys        | s Sei       | . Alc          | Z GI     | n Ty:        | r Cy         | s Ty       | -        |          |              |
|    | ~ -   |            | c              |               |        |                | 870      | 1        |       |            |             | 0/.            | ,        |              |              |            |          | •        |              |
|    | ~ -   |            |                | g aa          | t aat  | t cci          | t gta    | a ggt    | : ttg | , ato      | ; ctt       | ct             | t tc     | t ga         | g gt         | t gc       | 1 LL     |          |              |
|    | 25    | 7 Ās       | p Ār           | g aa<br>g Asi | n Ası  | n Pro          | o Val    | l Gly    | Lei   | ı Met      | Let         | т пе           | u Se     | r Gl         | u va         | 89         |          | u        |              |
|    | ~ =   | _          |                |               |        | QQ             | 5        |          |       |            | יפט         | J              |          |              |              | 0,         | _        |          |              |
|    | 26    | 0 gg       | a ga           | c at          | g ta   | t ga           | a cta    | a aag    | j aaa | a gco      | ace         | g to           | c at     | y ga<br>+ xa | c ad<br>n Ti | a cc       | o Dr     |          |              |
|    | 26    | 1 Gl       | y As           | c at<br>p Me  | t Ty   | r Gl           | u Lei    | u Lys    | з Гуз | S AT       | 1 TH.       | r se           | т ме     | LAS          | р цу<br>91   | D          | <u> </u> | _        |              |
|    | 20    | 2          |                |               | a۸     | Λ              |          |          |       | 90:        | •           |                |          |              |              | . •        |          |          |              |
|    | 26    | 4 ag       | a gg           | g aa          | g ca   | t tc           | g ac     | c aag    | 999   | a (((      | . yy'       | o aa           | <u>.</u> | - 90         | ,            |            | , ,      | -        |              |
|    |       |            |                |               |        |                |          |          |       |            |             |                |          |              |              |            |          |          |              |

RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/236,995D

DATE: 10/29/2001
TIME: 14:44:35

Input Set : A:\Seqlist.txt

Output Set: N:\CRF3\10292001\1236995D.raw

```
265 Arg Gly Lys His Ser Thr Lys Gly Leu Gly Lys Thr Val Pro Leu Glu
                                920
            915
268 tca gag ttt gtg aag tgg agg gat gat gtc gta gtt ccc tgc ggc aag
                                                                       2832
269 Ser Glu Phe Val Lys Trp Arg Asp Asp Val Val Pro Cys Gly Lys
                            935
        930
272 ccg gtg cca tca tca att agg agc tct gaa ctc atg tac aat gag tac
270
                                                                       2880
273 Pro Val Pro Ser Ser Ile Arg Ser Ser Glu Leu Met Tyr Asn Glu Tyr
                                             955
                        950
276 atc gtc tac aac aca tcc cag gtg aag atg cag ttc ttg ctg aag gtg
                                                                       2928
277 Ile Val Tyr Asn Thr Ser Gln Val Lys Met Gln Phe Leu Leu Lys Val
                                         970
                     965
278
                                                                       2949
280 cgt ttc cat cac aag agg tag
281 Arg Phe His His Lys Arg
                980
282
285 <210> SEQ ID NO: 2
286 <211> LENGTH: 982
287 <212> TYPE: PRT
288 <213> ORGANISM: Zea mays
290 <220> FEATURE:
291 <221> NAME/KEY: VARIANT
292 <222> LOCATION: 485, 499, 502, 512, 513, 521, 528, 530, 659, 671, 672, 676,
          683, 684, 685, 686, 693, 699, 703, 706, 707, 708, 709, 710
294 <223> OTHER INFORMATION: Xaa = Any Amino Acid
 296 <400> SEQUENCE: 2
 297 Met Ala Ala Pro Pro Lys Ala Trp Lys Ala Glu Tyr Ala Lys Ser Gly
 298 1
 299 Arg Ala Ser Cys Lys Ser Cys Arg Ser Pro Ile Ala Lys Asp Gln Leu
                                     25
                 20
 301 Arg Leu Gly Lys Met Val Gln Ala Ser Gln Phe Asp Gly Phe Met Pro
 303 Met Trp Asn His Ala Arg Cys Ile Phe Ser Lys Lys Asn Gln Ile Lys
 305 Ser Val Asp Asp Val Glu Gly Ile Asp Ala Leu Arg Trp Asp Asp Gln
 307 Glu Lys Ile Arg Asn Tyr Val Gly Ser Ala Ser Ala Gly Thr Ser Ser
 309 Thr Ala Ala Pro Pro Glu Lys Cys Thr Ile Glu Ile Ala Pro Ser Ala
                                      105
                  100
 311 Arg Thr Ser Cys Arg Arg Cys Ser Glu Lys Ile Thr Lys Gly Ser Val
                                  120
              115
 313 Arg Leu Ser Ala Lys Leu Glu Ser Glu Gly Pro Lys Gly Ile Pro Trp
                                                  140
                              135
 315 Tyr His Ala Asn Cys Phe Phe Glu Val Ser Pro Ser Ala Thr Val Glu
                                              155
                          150
 317 Lys Phe Ser Gly Trp Asp Thr Leu Ser Asp Glu Asp Lys Arg Thr Met
                                          170
 319 Leu Asp Leu Val Lys Lys Asp Val Gly Asn Asn Glu Gln Asn Lys Gly
  318
                                      185
                  180
 321 Ser Lys Arg Lys Lys Ser Glu Asn Asp Ile Asp Ser Tyr Lys Ser Ala
```

Use of n and / or Xaa has been detected in the Sequence Listing. Review the Sequence Listing to ensure a corresponding explanation is present in the <220> to <223> fields of each sequence using n or Xaa.

VERIFICATION SUMMARY

PATENT APPLICATION: US/09/236,995D

DATE: 10/29/2001 TIME: 14:44:36

Input Set : A:\Seqlist.txt

Output Set: N:\CRF3\10292001\1236995D.raw

```
L\!:\!157 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1
L:161 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1
L:164 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 L:165 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1
L:168 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1
L:169 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1
L:201 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1
L:205 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1
L:208 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1
L:209 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1
L:213 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1
L:357 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2
L:359 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2
L:361 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2
L:363 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2
L:379 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2
L:381 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2
L:383 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2
L:385 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2
```